

Application of Chih-Ta Star Sung - U.S. Application No. 10/712,138

A method for decoding a video stream, comprising:

saving the coming block of compressed video to the first on-chip temporary storage device, applying the variable length decoding method to decode the video bit stream and block by block recovering the DCT coefficients and dequantizing the coefficient by multiplying the quantization table and inverse transforming the DCT coefficients to matrix of pixel values;

saving the decompressed block of pixels into the second on-chip temporary storage device;

~~VLD decoding video stream and maintaining a DCT coefficient table in a storage medium, wherein the DCT coefficient bit stream table includes pairs composed of DCT coefficient bit streams and block pixel data, the block pixel data providing inverse DCT information of the corresponding DCT coefficient bit stream;~~

~~looking up the DCT bit stream table when receiving a VLD decoded DCT input stream to find whether the new DCT coefficient matrix matches a DCT coefficient matrix; and~~

~~utilizing the block pixel data corresponding to the matched DCT coefficient bit stream to generate inverse DCT data of the DCT input bit stream if the DCT~~

~~bit stream table includes the matched DCT~~

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looking up incoming compressed block of pixel data to the blocks of received pixel data saved in the first temporary storage device and identifying whether any of the previous block is equivalent to the coming block; and if a "Match" happens;

utilizing the block pixel data saved in the second temporary storage device corresponding to the matched block of bit stream to represent the block of decompressed bit and saving the decompressed block of pixels to a predetermined location of the second storage memory stream .

otherwise, decompressing the block of bit stream according to the normal decompression procedure and saving the decompressed block of pixels to a predetermined location of the second storage memory.

2. (Currently Amended) The method of claim 1, further comprising the steps of decoding the DCT bit stream and saving the decoded result of block of pixels into the DCT bit stream table if the DCT input stream fails to match any DCT reference bit stream in the DCT bit stream table.

The method of claim 1, further comprising the steps of decoding the DCT bit stream and saving the decoded result of block of pixels into the second temporary storage device and saving the DCT coefficients into the first temporary storage

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device if the DCT input stream the compressed block fails to match any DCT block
reference bit stream in the DCT bit stream table of the previous blocks.

3. (Currently Amended) The method of claim 2, further comprising the step of
compressing the decoded result saved in the DCT bit stream saving the
decompressed result of DCT bit stream into an on-chip second temporary buffer.

4. (Currently Amended) The method of claim 1, wherein the coming DCT
reference input bit stream and the DCT reference bit stream are matched one of the
previous blocks of DCT coefficients are identical, then, the decoded block of pixels
is used to represent the coming block.

The method of claim 1, wherein the DCT input bit stream and the DCT reference
bit stream are matched if the DCT input bit stream and the DCT reference bit
stream are identical.

5. (Currently Amended) The method of claim 1, wherein the DCT input bit
stream and the DCT reference bit stream are matched if a difference of between the
DCT input bit stream and the DCT reference bit stream is lower than a

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predetermined ~~threshold~~ tolerance.

6. (Currently Amended) The method of claim 1, further comprising a step of representing a target block with a decompressed block pixels² within neighboring blocks if a compressed stream of the previously saved block ~~streams~~ in the first temporary storage device is identical to a target block stream.

7. (Original) The method of claim 1, wherein a threshold value is compared to a weighted difference of compressed DCT coefficients of at least one previously saved block and a target block for determining the similarity.

8. (Original) The method of claim 7, wherein a weighted difference between at least one previously saved block stream and a target block stream is applied to determine whether a lossy decoding is applied in decompressing the video bit stream.

9. (Original) The method of claim 8, wherein one of previously saved decoded blocks is selected to represent a target block if a weighted sum of DCT coefficient difference between a target block and the closest block saved in the storage

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is less than a predetermined threshold;

10. (Cancelled)

11. (Currently Amended) The method of claim 1, wherein a block of decompressed bit stream is compressed before being stored to the second temporary storage a-buffer for future representing new targeted block stream.

12. (Original) The method of claim 1, wherein a block of decompressed bit stream is compressed through a lossless compression mechanism before being stored to ~~a-buffer~~ an on-chip secondary temporary buffer and is decompressed for future representing a new targeted block stream.

13. (Canceled)

14. (Canceled)

15. (Canceled)

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16 (Currently Amended) An apparatus for decoding a video stream, comprising:

a bit stream decoding unit including a VLD, variable length deciding and reconstructing the video bit stream to DCT matrix and a DeQuantization unit multiplying the DCT matrix to inverse transforming and recovering the block of pixel matrix;

a the first on-chip storage device for storing compressed video data stream and the second on-chip storage device for storing the corresponding decompressed pixel data of at least one previous block ;

a circuit of comparing a coming compressed stream to at least one previously saved stream; and

a circuit of selecting one of previously saved decoded blocks to represent a targeted block if a the targeted block is identical to one of the previously saved blocks.

17. (Currently Amended) The apparatus of claim 16, wherein an output of a comparator is used to select the decoded pixels stored in the on-chip second temporary buffer to represent the target block pixels.

18. (Original) The apparatus of claim 16, wherein decoded block pixels

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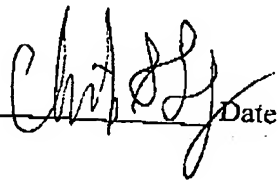
represent the target block pixels by copying the decoded block pixels.

19. (Canceled)

20. (Currently Amended) The apparatus of claim 13, wherein in decompressing an I-type frame ~~and~~ or a JPEG still pictures, one of previously decoded and saved blocks is selected to represent the target block.

21. (Canceled)

Respectfully submitted,

By:  Date: October 7th, 2008